

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON A COLLECTION OF FISHES FROM THE
ISLAND OF MINDANAO, PHILIPPINE ARCHI-
PELAGO, WITH DESCRIPTIONS OF NEW
GENERA AND SPECIES.

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In 1903, through the courtesy of the Surgeon-General of the United States Army, a collection of fishes was obtained for the Bureau of Fisheries from the Rio Grande, on the island of Mindanao, Philippine Archipelago. The fishes were collected in October, 1903, by Dr. Morse, of the medical department of the Army, who was stationed at Cotabato, near the mouth of that stream, and all of the specimens were secured at or in the vicinity of that place.

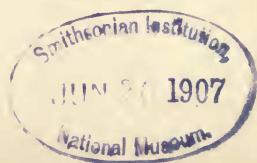
The Rio Grande is a stream of considerable size which rises in the central part of the island and flows southwesterly toward Lake Liguasan; after receiving the outflow of this large lake it flows northwesterly and discharges through a delta into Illana Bay.

The collection is small and contains only 31 species, but these represent 20 families. Four of the species have not heretofore been described, and two of these are made the types of new genera. The native names of the species are given when known.

CHIROCENTRIDAE.

1. *Chirocentrus dorab* (Forsk.)

One fine specimen, length, 19 inches. Head, 5.40; depth, 6.75 (without caudal); dorsal, 17; anal, 33. Color in spirits bluish above, sides and under parts silvery; axis of pectoral and its outer rays dusky.



DOROSOMATIDAE.

2. *Anodontostoma chacunda* (Hamilton).

"CABASHI."

Two specimens, length, 7.75 and 8 inches. Head, 3.45; depth, 2.50; posterior dorsal ray not prolonged. Color in spirits silvery, the back with about 6 longitudinal dusky lines; a brown spot above axis of pectorals; tip of anterior dorsal rays dusky; the interior rays of each caudal lobe with an indistinct dusky wash. These specimens represent the form called by Dr. Bleeker var. *selangkat*.

ENGRAULIDAE.

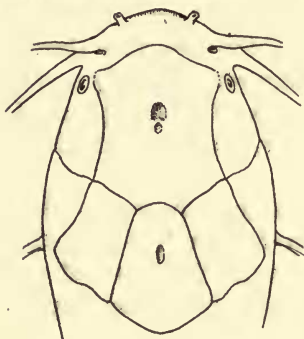
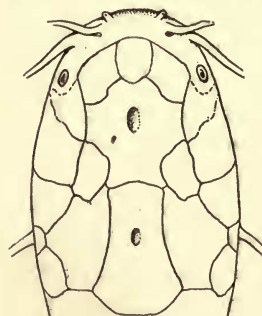
3. *Anchovia boelama* (Forskål).

Two specimens, length, 2.50 and 3.75 inches. Head, 3.75; depth, 4.10; dorsal, 14; anal, 33; scales, 34; snout projecting. Color in spirits silvery, bluish above; no silvery band; fins uniform.

CLARIIDAE.

4. *Clarias gilli* Smith & Seale, sp. nov.

Head, 7; depth, 8.50 without caudal; vertical fins united to caudal; dorsal, 93; anal, 87; head with two fontanelles; barbules, 8, the lower maxillary and upper mandibular pairs very long, extending to middle of pectoral fin; teeth in jaws small, sharp-pointed; vomerine teeth small, rounded, in a somewhat crescent-shaped patch; top of head formed of 21 bony plates, three of which are anterior to the large plate bearing the anterior fontanelle; pectorals short, .5 head, their spines serrated; ventrals .33 head, their tip reaching to origin of anal; the vertical fins extend only about one-third the length of the caudal, to which they are

*a**a. Clarias nieuhoffi*, after Bleeker.*b**b. Clarias gilli* Smith & Seale.

firmly united; length of caudal equal to head; distance from origin of dorsal to tip of snout 3.90 in length without caudal; height of dorsal about 3 in head, the anal slightly deeper. Color in spirits uniform dull brown, with a slightly bluish tint; fins similar to body in color, except pectorals

and ventrals, which are yellowish. Two fine specimens, length, 12.75 and 13.50 inches.

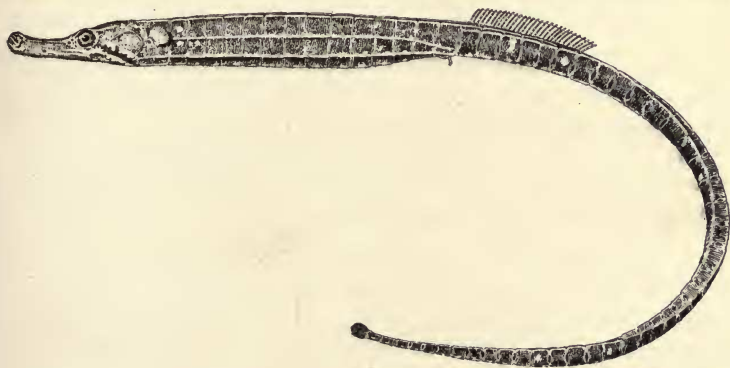
This species resembles *C. nieuhofi* Valenciennes, but differs in the number and arrangement of the cephalic plates, in having but two fontanelles, and in coloration. For comparison, outline figures of the dorsal surface of the heads of these two species are here given.

Type, 12.75 inches long, from Rio Grande, Mindanao, No. 55,620, U. S. National Museum. Named for Dr. Theodore Gill.

SYNGNATHIDAE.

5. *Corythoichthys pullus* Smith & Seale, sp. nov.

Head, 8 in length without caudal; depth, 2.50 in head; snout, 2.20 in head, its width 4 in its length; eye, 2.50 in snout; dorsal, 29; anal, 1; pectoral, 14; osseous rings, 15 + 41; base of dorsal not elevated; angle of forehead not abrupt, being about 30°; no filaments on head; opercle crossed by a single bony stay; ventral surface of rings on belly and thorax with a sharp median ridge; dorsal ridge of trunk and tail not continuous; a low median ridge on top of snout, with small lateral ridge from orbit to tip of snout; length of pectorals 2.50 in snout; caudal 3 in snout; anal opening situated on the posterior body ring; the dorsal fin located on the 6 anterior rings of the tail; longest dorsal ray about 2.50 in snout. Color



Corythoichthys pullus Smith & Seale, sp. nov.

in spirits uniform dark lava brown, no black bands or spots anywhere on body; some indistinct pearl-colored spots on ventral surface of belly; a whitish line just below eye; an oblique dusky bar on lower part of opercles uniting under the throat; some lighter spots and reticulations on under part of head; dorsal with about four longitudinal rows of brown spots; pectorals and caudal gray.

This species resembles *C. tapeinosomus*, but differs in the location of anal opening and in various other characters.

One specimen, the type, 5.60 inches long, from the Rio Grande, Mindanao; No. 55,621 U. S. National Museum.

MUGILIDAE.

6. *Liza trocheli* Bleeker.

Nine specimens, 1.50 to 2.50 inches long. Head, 3.50; depth, 3. 20; dorsal, iv-i, 8; anal, iii, 8; scales, 32; preorbital toothed at end, but without notch; no adipose eyelid. Color uniform silvery gray.

SPHYRAENIDAE.

7. *Sphyræna obtusata* Cuvier & Valenciennes.

"CUMBUSAN"

One specimen, 9 inches long. Head, 3.10; depth, 6.50; dorsal, v, 19; anal, i, 11; scales, 83. Color in spirits dusky above, white below, scarcely a trace of dusky band on sides. Similar in every respect to other specimens from Cavite.

CARANGIDAE.

8. *Scomberoides tala* (Cuvier & Valenciennes).

"CASSISUNG."

One specimen, 11.75 inches long. Head, 4.60; depth, 3; dorsal, vii-i, 20; anal ii-i, 17; teeth on jaws, vomer, palatine, and tongue, some enlarged canines in jaws; maxillary extending behind posterior margin of eye. Color in spirits silvery, with bluish wash; several large vertical brownish blotches on sides; axis of pectoral with dark spot.

9. *Scomberoides tolool-parah* (Rüppell).

"CASSISUNG."

Five specimens, 5.50 to 10.75 inches long. Head, 4.50; depth, 4; dorsal, v-ii, 19; anal, ii, 20; maxillary ending under posterior third of eye; minute teeth on jaws, vomer, palatines and tongue. Color in spirits silvery, bluish above, tip of dorsal black.

10. *Caranx fosteri* (Cuvier & Valenciennes).

(*Caranx hippos* Günther.)

One specimen, length 5 inches. Head, 3.10; depth, 2.50 without caudal; dorsal, ix-i, 21; anal, ii-i, 17; 42 scales in curved portion of lateral line, 30 armed scutes in straight portion; the curved portion contained 1.18 in straight; breast scaled; teeth in upper jaw in villiform band with outer series of larger ones, teeth of lower jaw in single series; maxillary ending on a line with posterior margin of pupil, its distal width equal to pupil. Color in spirits uniform silvery, fins uniform yellowish white; a dusky spot in axis of pectoral; an indistinct opercular spot.

11. *Caranx carangus* (Bloch).

Sixteen specimens, length, 2.20 to 3.50 inches. Head, 2.80; depth, 2.18 without caudal; dorsal, vii-i, 20; anal, ii-i, 16; scales, 52; in curved portion of lateral line, 32 armed scales in straight portion; breast naked; maxillary ending on a line with posterior third of pupil.

This species resembles *C. fosteri*, but is easily distinguished by the naked breast; it is also a little deeper. Our specimens show no dusky bands but are uniformly silvery, the spinous dorsal grayish.

LEIOGNATHIDAE.

12. *Leiognathus dussumieri* (Cuvier & Valenciennes).

Five specimens, length, 1.50 to 3 inches. Head, 3; depth, 1.50; dorsal, viii, 16; anal, iii, 14; lateral line complete; breast naked; two small spines above anterior margin of eye. Color in spirits silvery; axis of pectoral dusky; fins unmarked.

13. *Leiognathus splendens* (Cuvier & Valenciennes).

One specimen, length 3.50 inches. Head, 3; depth, 2; dorsal, viii, 18; anal, iii, 14; lateral line incomplete. Color silvery, bluish above, a large black blotch occupying upper half of spinous dorsal.

14. *Gazza minuta* (Bloch).

Four specimens, length, 3.10 to 3.50 inches. Head, 3; depth, 2; dorsal, viii, 16; anal, iii, 14; lateral line incomplete; teeth like small canines; lower margin of preopercle denticulate. Color in spirits silvery; back with yellowish reticulating lines.

AMBASSIDAE.

15. *Priopis urotaenia* (Bleeker).

Eight specimens, length, 1.50 to 4.75 inches. Head, 2.50; depth, 2.50; scales, 30; two rows of scales on cheeks. Color in spirits yellowish white, a silvery line extending forward from base of caudal along middle of sides; membrane between second and third dorsal spines dusky. Similar in every respect to other numerous examples from Bacon, Sorsogon, P. I.

SERRANIDAE.

16. *Epinephelus bontoides* (Bleeker).

One fine specimen, length, 12.10 inches. Head, 2.45 without caudal; depth, 3; dorsal, xi, 15; anal, iii, 8; scales, about 88; interorbital less than eye; opercular spines equidistant; opercular flap pointed; enlarged serrae at angle of preopercle. Color in spirits light brownish, with scattered black dots over body about half the size of pupil.

LUTIANIDAE.

17. *Lutianus lineatus* (Quoy & Gaimard).

Two specimens, length, 7.50 and 11 inches. Head, 2.75; depth, 2.50; dorsal, x, 14; anal, iii, 8; scales about 50; teeth on tongue; preopercle scarcely notched, knob small; caudal truncate (broken); maxillary extending to below anterior half of eye. Color in spirits grayish; larger specimen more silvery; indistinct dusky oblique lines above lateral line, longitudinal ones below; all the fins grayish except pectorals, which are yellow.

18. *Lutianus malabaricus* (Bleeker).

Three specimens, length, 8.75 to 14.50 inches. Head, 2.50; depth, 2.45 without caudal; dorsal, xi, 14; anal, iii, 8; scales in lateral line, 52; no lingual teeth; caudal truncate; notch of preopercle shallow but wide and distinct, knob distinct; pectorals long, extending to base of anal. Color in spirits yellowish with indistinct oblique dusky lines above lateral line, longitudinal lines below; axis of pectorals dusky; a white spot on top of caudal peduncle scarcely showing in very old example; fins uniform yellowish white.

19. *Terapon jarbua* (Forsk.).

"BUNGAO."

Two specimens, length, 6.75 and 7.75 inches. Head, 3.10; depth, 3.14; dorsal, xii, 10; anal, iii, 9; scales, 80. Color in spirits silvery, with three brownish longitudinal bands; dorsal with large black blotch; soft dorsal with two dusky blotches; oblique dusky bands on caudal. Similar in every respect to specimens from San Fabian, Pangasinan, P. I.

HAEMULIDAE.

20. *Pristipoma hasta* (Bloch).

Two fine specimens, length, 10.50 inches. Head, 2.90; depth, 2.80; dorsal, xii, 14; anal, iii, 7; scales, 52; gill-rakers, 12. These specimens represent the two forms *P. hasta* (Bloch) and *P. negeb* (Rüppell), which Dr. Day (Fishes of India, p. 746) unites under the name *P. hasta*. These specimens show no difference except in their markings; one represents the form with numerous small black dots forming irregular longitudinal lines, similar in every respect to *P. hasta* as figured by Bleeker (Atlas Ichthyologique, vol. 8, pl. cccxxv, fig. 3); the other represents the form with 8 vertical bands, as shown in Bleeker's figure (op. cit., pl. cccli, fig. 4), this specimen showing also numerous indistinct lines of dots as in *P. hasta*.

MULLIDAE.

21. *Upeneus vittatus* (Forsk.).

"TIAUW."

Three specimens, length, 4.20 to 11 inches. Head, 3.18; depth, 3.20; dorsal, vii, 10; anal, i, 6; scales, 37; barbules, short. Color in spirits, yellowish, upper half of body with four dusky longitudinal lines; top of spinous dorsal dusky; an indistinct dusky band through its middle; soft dorsal with two indistinct dusky bands, each lobe of caudal with five or six oblique dusky bars; in the small examples the markings almost obliterated.

EPHIPPIDAE.

22. *Ephippus argus* (Gmelin).

One specimen, length, 10 inches. Similar in every respect to specimens from Cavite and Bacon, Sorsozon, P. I. Head, 3.50; depth, 1.75 without caudal. Color in spirits brownish with a wash of blue, scattered black dots over back and sides; ventral surface lighter.

TETRAODONTIDAE.

23. *Tetraodon patoca* Buchanan.

Six specimens, length, 1.50 to 2.50 inches. Head, 2.50; depth, 3; dorsal, 9; anal, 8; small prickles on back from interorbital space to a line with posterior axis of pectorals, and on belly from chin to near anal spine, other parts naked; a simple nonperforated nasal cavity with two membranous flaps. Color in spirits brownish above, whitish below, a dusky band on anterior interorbital space; another over back to base of pectoral fins, another at base of spinous dorsal; sides of body with large white spots; fins white; posterior half of caudal dusky.

ANABANTIDAE.

24. *Anabas scandens* (Daldorff).

Three fine specimens, length, 5 to 5.20 inches. Head, 3; depth, 2.60 without caudal; dorsal xviii, 7; anal, x, 9; scales in lateral line, 29; opercle and preopercle serrated; vomerine teeth. Color in spirits uniform dull brown.

OPHIOCEPHALIDAE.

25. *Ophiocephalus melanopterus* Bleeker.

"AMANU."

Three specimens, length, 8.75 to 14.50 inches. Head, 3; depth, 6; dorsal, 40; anal, 25; scales, 54. Color in spirits blackish brown, fins blackish, lower part of head and ventral surface of body whitish with dark brown spots. A large series of specimens will probably show *O. melanopterus* and *O. striatus* to be identical.

GOBIIDAE.

26. *Glossogobius giuris* (Buchanan).

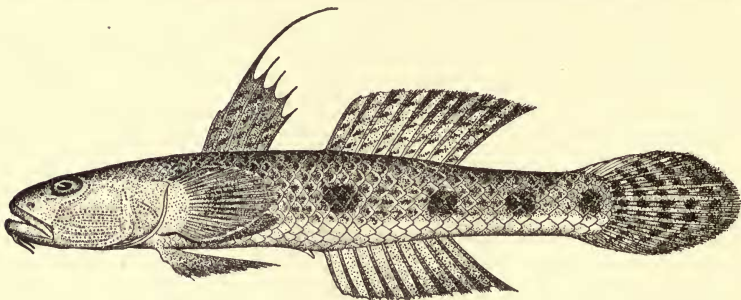
Eleven specimens, length, 2.10 to 7.75 inches. Head, 3; depth, 5.50; scales, 30; dorsal, vii, 9; anal, 9; tongue, forked; no canines; caudal rounded; about 20 rows of scales in front of dorsal; ten rows between origin of the dorsals. Color in spirits yellowish brown with about 5 indistinct dusky bands over back which alternate with dusky blotches on sides; dorsals and caudal with rows of black dots; pectorals usually with two dusky blotches on base; ventrals and anal usually yellow, but in some specimens slightly washed with dusky. In general form and color this species resembles *G. brunneus* of Japan; the Japanese form, however, always has black spots on nuchal region.

Illana Smith & Seale, gen. nov. (Gobiidae).

This genus is characterized by the presence of two distinct barbules on the chin; teeth in jaws in two series, the outer ones in each jaw enlarged, canine-like; no teeth on vomer, palatines, or tongue; ventrals united; head naked and broad; tongue emarginate. Type, *Illana cacabet*.

27. *Illana cacabet** Smith & Seale, sp. nov.

Head, 3.75; depth, 6 in length without caudal; dorsal, vi, 10; anal, 10; a series of eight scales between origin of soft dorsal and anal; scales, 30 from upper margin of opercle to end of vertebrae; snout, 3.20 in head; interorbital less than eye. Body moderately elongate, compressed; snout rather rounded, the lower jaw slightly the longer; width of head, 1.30 in its length, its depth 2 in its length; cheeks fat, the lower half of cheek crossed by 5 or 6 longitudinal lines of minute warts, with one or two oblique rows at each end of these lines, probably the openings of mucous pores; tongue



Illana cacabet Smith & Seale, sp. nov.

rather deeply emarginate; teeth small, with the outer row in each jaw enlarged, canine-like; maxillary ending on a line with anterior margin of eye; chin with two barbules about equal in length to diameter of eye; a shallow longitudinal groove in nuchal region extending to snout; head without scales; scales of body adnate, those of nuchal region small, about 15 in front of dorsal, a series of 10 between the origins of the dorsals; spinous dorsal with the second spine elongate, in males extending to or beyond middle of soft dorsal; longest dorsal ray, 1.60 in head; pectorals, 1.10 in head; ventrals, 1.35 in head; origin of anal fin midway between tip of snout and base of caudal; anal papilla distinct; base of anal, 1.20 in head its longest ray 1.75 in head; caudal rounded, 1.10 in head.

Color in spirits yellowish below, brown above, with about three indistinct dusky bands over back and 5 dusky blotches along the sides, one at base of caudal, one on middle of caudal peduncle, one under posterior of soft dorsal, one under anterior of soft dorsal, and the anterior one under the anterior half of spinous dorsal; no bluish marking or spot on shoulder; two or three irregular brown lines connecting these blotches more or less; some irregular fine brown dots and lines on head and cheeks; dorsal fins with rows of brown dots forming oblique lines, less distinct on spinous dorsal; caudal with brown vertical bands, the four upper rays white at base; pectorals, ventrals, and anal bluish.

Three specimens, length, 3 to 3.25 inches. The type is a male, length 3.25 inches, from the Rio Grande in Mindanao, No. 55,622, U. S. National Museum.

* *Cacabet* is a Philippine name for the goby.

Gobius cyanosomus Bleeker probably belongs to this genus, but is a different species, as seen by the presence of the lines of warts on cheeks of our specimens, and the different color markings. In *G. cyanosomus* the jaws are said to be equal, in our specimens the lower jaw is a little the longer.

28. **Glossogobius biocellatus** (Cuvier & Valenciennes).

Two specimens, length, 2 inches. We refer these examples to this species with considerable doubt, owing to their mutilated condition. Head, 3.25; depth, 6.50; dorsal, vi, 10; anal, 9; scales, about 26; tongue forked. Color in spirits brownish with indistinct darker lines; ventral and anal fins bluish; spinous dorsal with dusky blotch; soft dorsal with rows of brown spots.

29. **Acentrogobius acutipinnis** (Cuvier & Valenciennes).

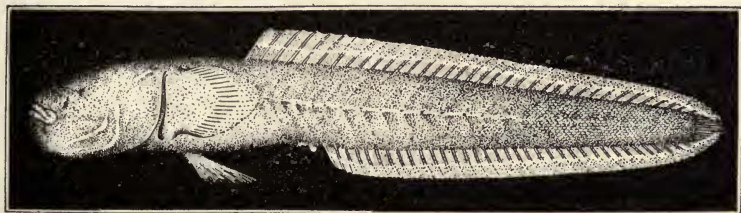
One specimen, length, 2 inches. Head, 3.45; depth, 4.75; dorsal, vi, 10; anal, 12; scales, 23; anterior dorsal spines filiform, nuchal region unscaled; Color in spirits yellowish with about 7 irregular bands over back forming blotches on sides; a blue line from eye to angle of mouth; another from eye to posterior margin of opercle. The dorsal spines in our example are much longer than in the specimen figured by Dr. Day.

Caragobius Smith & Seale, gen. nov. (*Gobiidae*).

Posterior third of body well scaled, head and anterior two-thirds naked; head large, oblong, quadrilateral; lower jaw heavy; a single row of small, sharp, curved canine teeth in each jaw, no enlarged canines; eyes entirely covered with skin; no barbules; tongue rounded, inconspicuous; gill-openings straight, vertical, restricted; a small pore above each gill-opening which opens into a cavity separate from gill-cavity; dorsal fins continuous, long and low; ventrals fully united. This genus is related to *Trypauchen* Cuvier & Valenciennes, but is distinguished by the differences in squamation, teeth, eyes, etc. Type, *Caragobius typhlops*.

30. **Caragobius typhlops** Smith & Seale, sp. nov.

Head, 5 in length without caudal; depth, 2; snout, 3.75 in head; dorsal, vi, 30; anal, 34; scales on posterior third of body only. Body elon-



Caragobius typhlops Smith & Seale, sp. nov.

gate, compressed; the head large, quadrangular, its depth slightly greater than width, the width 1.45 in its length; lower jaw^{sup} heavy, the cleft of

mouth directed obliquely upwards; maxillary 3 in head measured to symphysis; a single row of about 14 sharp curved teeth in each jaw; no teeth on vomer, palatines, or tongue; tongue small, rounded; eyes rudimentary and covered with skin; gill-opening restricted to sides, the isthmus very broad; a small pore or slit on nuchal region just above gill-slit opening into a pit or cavity separate from gill-cavity; head naked, with numerous mucus pores; a depression midway between eye-pit and upper posterior margin of opercle in which a roughened bony surface is exposed; no scales except on posterior third of body, which is well scaled, about 12 series between dorsal and anal at anterior portion of squamation; vertical fins not enveloped in skin; dorsals connected, the entire fin low, its origin on a line with posterior third of ventral rays, the posterior rays continuous with caudal; anal fin long, confluent with caudal, its rays short, its origin below the last dorsal spine; anal papilla very prominent; pectoral base very broad; ventrals 1.95 in head, united, the anterior portion forming a cup-shaped disk. (In all the specimens the fins, the ventrals excepted, are mutilated and a full description is impossible.) Color in spirits uniform yellowish white.

Five specimens, length, 2 to 2.25 inches. Type, 2.25 inches long, from the Rio Grande, Mindanao; No. 55,619, U. S. National Museum.

SOLEIDAE.

31. *Achirus thepassii* Bleeker.

One specimen, length, 2 inches. Depth, 2.30 without caudal; no pectorals; interorbital narrow; dorsal, 69; anal, 48; scales, 89. Color in spirits yellowish with dark dots and blotches; rows of fine dots on fins.